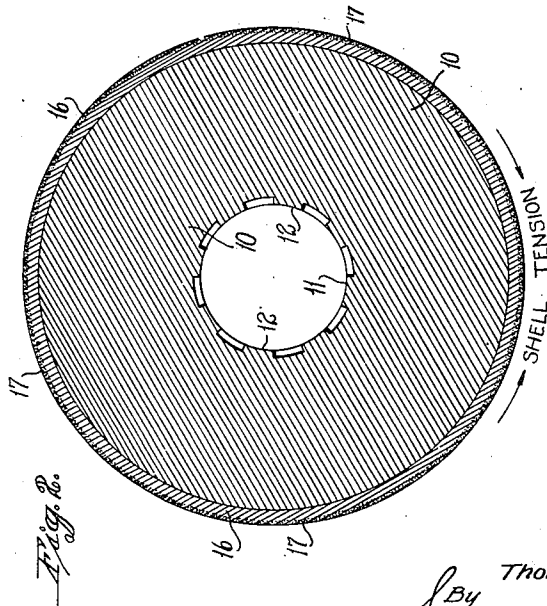
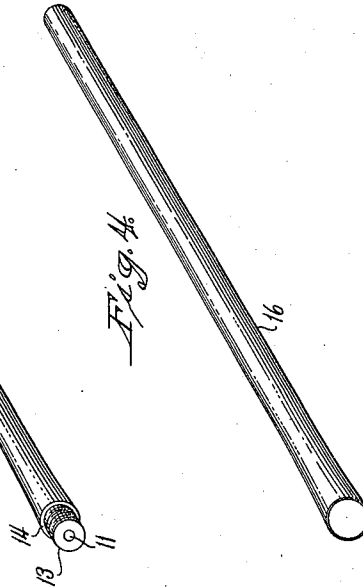
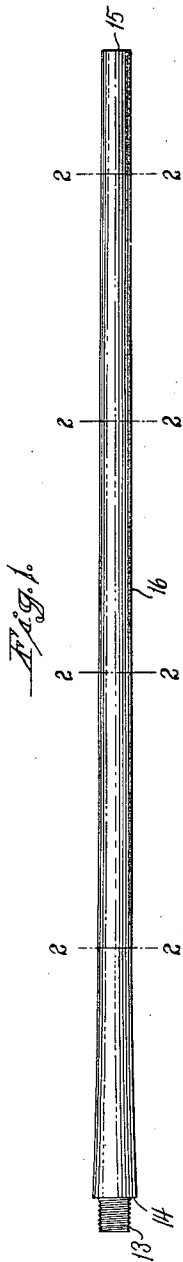


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COMPOSITE FIREARM BARREL
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COMPOSITE FIREARM BARREL

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2 Claims. (Cl. 42—76)

This invention relates to an improvement in firearm barrels, that is to say, rifle barrels, shotgun barrels, etc., etc.

One of the objects of the present invention is to provide a firearm barrel having a superior surface finish of attractive and durable character and of adequate heat emissivity.

Another object is to provide a superior composite firearm barrel comprising an inner barrel-body and an outer finishing-shell of wrought metal covering the barrel-body and gripping the same under tension.

A further object is to provide a superior composite firearm barrel comprising an inner barrel-body and an outer finishing-shell of wrought metal, which latter will remain in intimate engagement with the barrel-body despite such heating as will occur as an incident to the repeated firing of an arm of which the present improved composite barrel forms a part.

With the above and other objects in view, as will appear to those skilled in the art from the following, considered in conjunction with the accompanying drawing and appended claims, the present invention includes all features disclosed therein which are novel over the prior art.

In the accompanying drawing:

Fig. 1 is a view in side elevation of a composite firearm barrel embodying the present invention;

Fig. 2 is an enlarged-scale transverse sectional view thereof, taken on any one of the lines 2—2 of Fig. 1;

Fig. 3 is a perspective view of the barrel-body; and

Fig. 4 is a similar view of the finishing-shell.

The present invention contemplates applying a wrought metal finishing-shell to a barrel-body in such manner that the finishing-shell will remain in intimate contact with the barrel-body in all normal use to which the composite barrel may be put, and by means of which a superior, durable and attractive finish may be imparted to the surface of the barrel-unit. Preferably, the finishing-shell is formed of a wrought metal of a character dissimilar to the metal from which the barrel-body is formed, being formed, for instance, of brass, copper, aluminum, etc. It has been found that finishing-shells of wrought aluminum or aluminum alloys provide the desired characteristics to a high degree.

For the purpose of an understanding of the present invention, a rifle barrel has been chosen for illustration and description, though it will be understood that the invention is equally appli-

cable to other small-arms barrels, such, for instance, as shotgun barrels which are not rifled.

As shown in the accompanying drawing, the composite barrel of the present invention includes a barrel-body 10 preferably formed of steel and having the usual bore 11 which is rifled in the usual manner to provide interior helical lands 12. The particular barrel-body shown is provided at its rear end with an externally-threaded shank 13, by means of which the barrel may be attached to a suitable frame or receiver. The said externally-threaded shank 13 is of smaller diameter than the rear end of the main portion of the barrel-body 10 and results in the production of a rearwardly-facing seating-shoulder 14 which is of larger diameter than is the forward face or terminal 15 of the barrel-body (Fig. 3).

Over the barrel-body 10 is mounted a wrought metal finishing-shell 16 which may be formed of wrought aluminum, brass, copper, or such other material as is capable of receiving and holding the desired finish, and may, for instance, be of a thickness of about .015".

As before indicated, the finishing-shell is designed to closely embrace and grip the exterior surface of the barrel-body 10 and to remain thereon under a contracting tension during the normal use of the composite barrel of which the finishing-shell forms a part. Various methods which will be apparent to those skilled in the art may be employed for applying the wrought metal finishing-shell 16 to the barrel-body 10. It has been found that the application of the finishing-shell may be economically accomplished by drawing the finishing-shell so as to provide it with an interior contour substantially conforming to the exterior contour of the barrel-body 10, but of lesser diametrical dimensions than the same. The finishing-shell may now be heated to a degree sufficient to expand it, so that its interior diameter will exceed the exterior diameter of the barrel-body 10, after which the said finishing-shell may be slipped over the relatively-cold barrel-body. Upon cooling, the finishing-shell will shrink upon and tightly grip the barrel-body 10.

Preferably, when initially applied, the finishing-shell will exceed in length the length of the barrel-body proper, and after it has been shrunk in place, the respective opposite ends of the finishing-shell may be cut off flush with the shoulder 14 and the front face 15 of the barrel-body, or, if desired, portions of the finishing-shell may be

spun over to cover both the said shoulder 14 and front face 15.

The composite barrel may now be treated to provide the exterior of its finishing-shell 16 with a suitable surface of such character as will receive and hold, by adsorption or absorption, suitable coloring matter such as organic dyes or inorganic colors.

In case of an aluminum-covered composite barrel, the desired coating may be imparted to the surface of the finishing-shell by immersing the composite barrel in an electrolyte, such, for instance, as sulphuric acid, and connected in an electric circuit in such manner as to constitute an anode. Now when suitable electric current is caused to pass through the bath in which a suitable cathode, such, for instance, as lead, is also immersed, an oxide coating will be formed on the aluminum surface of the composite barrel forming the anode, which coating will in the main be composed of common oxide of aluminum (Al_2O_3) plus aluminum hydroxide and aluminum sulphate. The coating thus applied will be almost invisible and will have a very high heat emissivity. The coating referred to will, in addition, be extremely resistant to abrasion.

While various colors may be applied to the aluminum finishing-shell 16 after the same has been oxidized as described, it will be sufficient for the present purpose to refer to the blacking of the exterior surface of the composite barrel, inasmuch as blacking is the most desirable, owing to its low light-reflecting power. The oxide-coated surface of the composite barrel, which coating is indicated by the stippling 17 in Fig. 2, may be blacked by immersing the same in a solution of cobalt acetate or in a solution of a nitrate or chloride of cobalt and thereafter immersing the barrel in a solution of ammonium sulphide. For the present purpose, black is to be considered as a color.

The composite barrel, assembled and finished

as above described, will possess an exterior finish of deep black which will be highly resistant to abrasion and which, owing to its high heat emissivity, will assist in the dissipation of heat from the barrel-body. Furthermore, the finishing-shell 16 will, under all normal conditions of use, remain in intimate contact with the surface of the barrel-body 10, despite temperature rises occasioned therein by repeated firing of an arm of which the barrel may form a part.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are therefore to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A composite barrel for firearms, comprising: a relatively-thick tubular barrel-body and a relatively-thin tubular heat-dispersing and finishing shell composed of different metal than the said barrel-body and having a greater degree of thermal conductivity than the same, the said heat-dispersing and finishing shell having its outer surface oxidized and permeated with a coloring material of a character serving to increase the heat emissivity of the said shell.

2. A composite barrel for firearms, comprising: a relatively-thick tubular barrel-body and a relatively-thin tubular wrought-metal heat-dispersing and finishing shell having a greater degree of thermal conductivity than the said barrel-body and composed primarily of aluminum and applied over the said barrel-body in intimate thermal engagement therewith and having an outer surface composed mainly of aluminum oxide with a coloring material permeated thereinto.

THOMAS I. S. BOAK.